# A SHORT HISTORY OF PLASTIC SURGERY

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IT HAS for long been the custom in this hospital for a member of the Medical Staff to give the opening address at the beginning of each academic year. Having been entrusted with the task this morning, it is my very pleasant duty, on behalf of the Medical Staff of the Royal Victoria Hospital, to welcome all present, and in particular, all those fresh from conquests in anatomy and physiology, who are now embarking on their clinical studies in this great hospital.

I have no doubt the original purpose of this talk was to tell you, the new students, something of the history and traditions of the hospital, and of the responsibilities which are inseparable from the very great privilege of caring for patients, so I make no apology for directing my opening remarks mainly to you. At the outset let me sympathize with you. Since I occupied your position, the speed of scientific discovery and advance has been staggering and I feel very humble when I consider the amount of knowledge which is expected from you to-day. However, the fact that you have advanced successfully to this stage, probably indicates that your basic education has been such that you are trained to sift information in a critical manner and to absorb principles rather than facts, so that you may gradually build up a total picture in a reproducable form. With so much to learn, I consider this is essential, and your task is possibly made easier now by the developing unity of biology, which, as Hans Popper said, "permits a replacement of memorizing of facts, by the recognition of principles of thinking". No examination system is perfect, and it is unfortunate that the present one fragments your medical course into distinct subjects and presents you with a series of hurdles, each of which must be surmounted before proceeding to the next. Inherant in this somewhat artificial system, is the risk that success in an examination may be interpreted as giving, not only the green light to proceed to the next stage, but also permission to discard all knowledge of the subject you have just passed. Do not fall into this trap. Remember the words of Sir William Osler, one of the great medical writers of all time, who in an address to university students, said "The hardest conviction to get into the mind of a beginner, is that the education on which he is engaged, is not a college course, not a medical course, but a life course, for which the work of a few years under teachers is but a preparation". He went on to say "You can all become good students, a few may become great students, and now and again one of you will be found who does easily and well what others cannot do at all, or only badly, which is John Ferriar's excellent definition of a genius". I hope that you will all fall within one or other of these categories.

During the next few years in the out-patients' department and in the wards of this hospital, you will have opportunities to increase your knowledge, by observation, by listening to your teachers and by examination of patients. Make the most of this time, see as much as you can, overcome your natural reticence and make sure that you are in the front row of the tutorial or around the patients' bedside.

Get into the habit of making careful notes and never be afraid to ask questions. Reject Mark Twain's aphorism, "There's no satisfactory substitute for brains, but silence often creates the same impression". This will never see you through your clinical examinations.

I congratulate you on your choice of career. When you complete your hospital training and become a registered medical practitioner you will find that you are not committed to any one particular way of life, but that many alternatives are open to you. Nevertheless, whether you choose to enter general practice, the hospital service, pure research, preventive medicine, medical administration, or any other branch of the profession, you will have the satisfaction of knowing that your efforts are being directed towards improving the lot of your fellow men.

In a brilliant inaugural address to the Leeds School of Medicine delivered in 1955, Eric Linklater concluded with these words, "I have merely been taking a sidelong glance at some aspects of the profession which you are about to enter, and may adorn, with the purpose of suggesting that, while some of you may die of overwork none of you need perish of boredom". I am confident that my colleagues will agree that these words are still true to-day.

*The Royal Victoria Hospital* had its beginning in a very humble way in 1792, as a dispensary, in rooms given by the Belfast Charitable Society. Five years later it moved to Factory Row, now Berry Street, where six beds were available for the treatment of in-patients. In 1817, when the population of Belfast was almost 28,000 a £5,000 General Hospital containing 100 beds was opened in Frederick Street; by 1870 the bed complement had been increased to 186. But the population of Belfast increased rapidly and by the end of the century it had been decided to build a new general hospital on a new site. That hospital, revolutionary in design and built at a cost of £300 a bed, was opened in 1903, by which time the population of the town was 350,000. It was named the Royal Victoria Hospital and is basically the hospital you know to-day. Alterations and additions have of course taken place over the years, in order to keep pace with advances in medicine and in an attempt to meet the ever increasing demands made on the services provided. Now, once again, we are faced with the need for a new hospital, and indeed much work has already gone into the planning of this project. It is our fervent hope that you will be able to watch the new "Royal" develop steadily over the coming years.

The most important single development since 1903 is the magnificent new building nearing completion at the Falls Road end of the hospital. This will house all the out-patient clinics, the casualty department and accident reception centre, the department of physical medicine, the medical social workers, the medical illustration department and the records for the entire hospital. With the rapid increase in the cost of hospitalization the emphasis to-day lies more and more on out-patient investigation and treatment. This new building, the best of its kind in the British Isles, should enable us to offer to the patients a higher standard of medical care, in conditions of greater comfort and privacy than they have hitherto enjoyed. It also provides much improved facilities for teaching. Dr. Ted Howell, head administrator at the Henry Ford Hospital, Detroit, stressed the over-all importance of the out-patient clinic in the hospital plan when he advised "Hang your hospital around the ambulatory clinic". Our ambulatory clinic opens in a few weeks time, let us hope that the new hospital will not be long delayed!

## Plastic and Reconstructive Surgery

This morning I have chosen to tell you a little about my own specialty, Plastic Surgery. I do so for two reasons, first because I think it might be of some interest to sketch the origin and development of this field from ancient times, through the middle ages down to the present day, and second, because it gives me the opportunity to pay tribute to a few of the men who, in my lifetime, have been responsible for advancing the specialty to the position which it now holds.

At the outset I am immediately faced with a difficulty of definition. Most specialties fall within well defined limits based on anatomical area or systems and their names are self explanatory. The terms genito-urinary, neuro- or gastro-intestinal surgery present no problem. But not so plastic, or reconstructive, surgery as it is sometimes called. The work of the plastic surgeon defies any simple definition, as it ranges over almost any part of the body and the dividing line between it and the other fields of surgery is indefinite and depends to a considerable extent on the ability, experience, and interest of the particular surgeon. The patients fall into all age groups and they may require reconstructive procedures for congenital malformation, injuries, or destruction of tissue incident to disease or the treatment of disease; very many suffer from malignant disease so that much destructive surgery has often to precede the reconstructive effort. The objectives of plastic surgery, however, are clear – namely the restoration of function or the improvement of appearance or both.

The origin of certain types of reconstructive surgery is of considerable antiquity, and even to-day many of the principles laid down in ancient times are still applicable. The Hindoos brought many types of reparative surgery to a high point of development and earliest Sanscrit documents dating from 1500 B.C. describe a method of nasal reconstruction using local cheek flaps. Later this was replaced by the forehead flap technique which is still known as the Indian method. Susruta, fifth century A.D., states that a certain Hindoo caste, the Koomas, made use of skin grafts from the gluteal region. It is probable that certain itinerant Arabs learnt surgery from the Hindoos and transferred the knowledge via Arabia to Egypt. Both Galen (130–210 A.D.), a Greek physician of the Hippocratic School and Celsus (35 B.C.–7 A.D.) of the Alexandrian School, describe reparative operations on the face, nose, lips and ears and discuss the transplantation of tissues.

In the early fifteenth century Branca of Catania in Sicily was repairing noses using the forehead flap Indian technique. His son Antonio, in order to avoid the scarring of the forehead, developed the method of applying a skin flap from the arm to rebuild the nose. This is still known as the Italian flap method. In 1597 Gaspar Tagliacozzi (1549–1599), a professor of anatomy at Bologna published his book describing the arm flap method of rhinoplasty and cheiloplasty. This book was illustrated with twelve remarkable wood cut plates which depict the method very clearly. However, these reparative procedures met with opposition from the ecclesiastics of the time who regarded such operations as meddling with the handiwork of God. Indeed as recently as 1788 the Paris Faculty forbade face repairing altogether. So fervent was the opposition to Tagliacozzi that his remains were eventually exhumed from the convent where he lay, in order that he might be reburied in unconsecrated ground.

Butler, in the first Canto of Hudibras, in 1663 refers to Tagliacozzi thus :

"So learned Tagliacotius, from
The brawny part of Porter's bum
Cut supplemental noses which
Would last as long as parent breach ;
But when the date of Nock was out
Off dropped the sympathetic snout."

Due to opposition from the church the development of reconstructive surgery was delayed for almost two hundred years. However, during the nineteenth century there was a re-awakening of interest in plastic surgery and reconstructive procedures were being carried out extensively in Europe and also in England and America. Transplantation of skin, cartilage, bone and fat and the repair of certain deformities such as cleft lip and cleft palate took place.

As a result of the introduction of methods of general anaesthesia at the mid-century extensive new fields for surgical endeavour were gradually opened up, and, towards the end of the century and in the early years of this century, interest was largely directed to exploring the exciting new possibilities which had been made feasible by access to the abdomen and other deeper parts of the body. As a result little effort was directed towards developing the age old techniques which of necessity had been confined mostly to the superficial areas. However, war has always provided a great stimulus for reconstructive surgery and the First World War was no exception. Being largely trench warfare there was naturally a far greater preponderance of maxillo-facial injuries than in any previous conflict, and in the early days no special organization had been established to cater for these difficult cases.

I would now like to continue the story by telling it through the lives of some of the people who have played all important roles in the development of the specialty in this country.

Harold Delf Gillies was born in Dunedin in 1882, the son of a Scotsman who had emigrated to New Zealand. He received his early education in Wanganui College and his medical training at Cambridge and St. Bartholomew's Hospital, graduating in 1908 and proceeding to the Fellowship of the Royal College of Surgeons in 1910. A distinguished sportsman, he rowed in the Oxford and Cambridge boat race in 1904 and played golf for the University, being at one time the tenth ranking amateur golfer in the British Isles. In later life he was an avid and expert fly fisherman and a keen artist. Tall and athletic, he had an impish sense of humour and was an inveterate practical joker, traits no doubt inherited from his great-great-uncle, the immortal Edward Lear.

His early interests centred on oto-laryngology but at the beginning of 1915 he went to France with the Red Cross as a general surgeon attached to the Army. There he met Charles Valadier who was just opening the first British jaw unit. Influenced by Valadier and by the writings of a German, Lindermann, on the good work which the enemy were doing in treating jaw fractures and wounds around the mouth, he became intrigued and, when an opportunity for leave came in June 1915, he went to Paris to see the famous Morestin from Martinique who was rumoured to be performing unbelievable feats of surgical reconstruction. This, I feel, may well have been a turning point in Gillies career and one which played a vital part in the subsequent development of plastic surgery. Many years later he wrote of his

meeting with Morestin, "I found him at the huge rambling Val-de-Grâce Hospital. He was a strange and moody octoroon, whose dagger-like sharpness was accentuated by his pointed moustache and tapering beard as well as the agility of his long thin hands. In the space of a single moment he could reveal the gentleness of a kitten and the savagery of a tiger. He received me kindly and I stood spellbound as he removed half of a face distorted with a horrible cancer and then deftly turned a neck flap to restore not only the cheek but the side of the nose and lip, in one shot. Although in the light of present-day knowledge it seems unlikely that this repair could have been wholly successful at that time it was the most thrilling thing I had ever seen. I fell in love with the work on the spot".

He returned from leave bursting with enthusiasm about plastic surgery and succeeded to such good effect in convincing the authorities of the need for a specialized unit to treat face and jaw injuries that at the end of the year he was sent back to England to establish a centre at The Cambridge Hospital, Aldershot. This opened in January, 1916, but soon it became obvious that a much larger unit was required. In August, 1917, the unit moved to the Queen's Hospital, Sidcup, Kent – a specially constructed 320 bed hutted hospital, later increased by a further 200 beds to accommodate Colonial units. Here facial injuries from the British, Canadian, Australian and New Zealand forces were treated in one hospital under the care of their own medical officers who worked together in friendly rivalry and healthy competition. Gillies' enthusiasm and drive played a great part in building up this unit and he introduced many of those things which a modern plastic surgery department takes for granted. Dental collaboration was provided on the spot; medical illustration was covered by Henry Tonks, a Fellow of the Royal College of Surgeons who abandoned surgery and became not only Professor of the Slade Art School but one of the great artists of his day; photographic records were kept and "continuation of treatment" beds were arranged in a nearby hospital. When the war ended in 1918 and the colonial units left, much work still remained to be done.

Thomas Pomfret Kilner born in 1890, the son of a schoolmaster at Manchester Grammar School, graduated from Manchester University in 1912. His intention was to enter into general practice, but the war intervened and he enlisted and served first in a Casualty Clearing Station and then in a General Hospital. By 1918 he had decided to follow a surgical career and it was at this stage that the War Office posted him to Sidcup, where he joined Gillies in a partnership which was to last until 1931. Small of stature, Tommy Kilner was a meticulous craftsman with an orderly mind and great organizing ability. He brought to the unit a wide experience in general surgery and was quick to pick up the principles of plastic surgery.

Gillies and Kilner were responsible for translating the lessons of war injury to the needs of peace time and for extending the boundaries of the specialty far beyond the restricted field of facial restoration. Between the two wars they were the only surgeons in the British Isles who devoted themselves exclusively to plastic surgery. Kilner perfected the craft of the specialty and was responsible for setting new standards in the care of children with clefts of the lip and palate. Gillies, a man of unique creative talents, bubbling over with ideas, developed the tube pedicle flap (conceived independently by Filatow in Russia at about the same time), the onlay eyelid graft, the palate push-back and a host of other original procedures.

One other person played a vital part in the progress of the specialty. In his book "The Art and Principles of Plastic Surgery", published in 1957, Sir Harold Gillies wrote : "As I look back to-day the two great things from Sidcup that have meant the most to me are the discovery of the tube pedicle and of Ivan Magill".

Ivan Whiteside Magill graduated from this medical school in 1913 and at the end of the war joined the unit at Sidcup as an anaesthetist. With every other patient's face either wrapped in bandages or held together with metal fracture splints it was not long before he realized that the experience was "not going to be an anaesthetic picnic". Over the ensuing years he gradually evolved the technique of large single tube endotracheal intubation using either the oral or nasal route, a development which completely transformed anaesthesia and one which made feasible many surgical procedures which had previously been impossible. Every surgeon whose field is north of the diaphragm is indebted to Sir Ivan Magill, and every anaesthetist owes much of his present freedom to the clear airway ensured by endotracheal intubation. I am glad to say Sir Ivan is reported as fit and well and still taking an active interest in his specialty.

British hospitals were slow to accept the new specialty and it was the North Stafford Royal Infirmary who gave the lead to the country by sponsoring a Plastic Unit. In 1934 St. Thomas' Hospital was the first teaching hospital in London to appoint a plastic surgeon, Kilner, to its staff. St. Bartholomew's, Gillies' own hospital, to which he had been attached since 1918 as an assistant in the Throat Department, did not accord him the distinction of formal recognition as a plastic surgeon until 1936, and then in charge of eight beds only.

Archibald Hector McIndoe, born in Dunedin in 1900, qualified in medicine in the same city in 1923 and immediately joined the staff of the Mayo Foundation in Rochester. There he worked with Charles and William Mayo and Counsellor. His main interest was in pathology and abdominal surgery and in these subjects he took the degrees of Master of Science and Master of Surgery at the University of Minnesota. After seven years, when his future at the Mayo Clinic was assured, the United States Government introduced legislation making it compulsory for all foreign nationals working in the country to take out American citizenship. Archibald McIndoe would have none of this, he was British and intended staying so, and he had no hesitation in packing his bags and leaving to start afresh in England. Some time previously, Lord Moynihan, when visiting the Mayo Clinic, had been so impressed by McIndoe's ability that he had told him should he ever choose to come to London he would have a job for him. In the event this failed to materialize and so at the age of 30 McIndoe found himself "on his uppers" in London without a job and with a wife and very young family to support. He fell back on his distant cousin, Sir Harold Gillies, and thus it came about that one of the best trained abdominal surgeons in the country took up plastic surgery.

Within a short time he was appointed to the staff of St. Bartholomew's, St. Andrew's, Dollis Hill and the North Staffordshire Royal Infirmary and in 1938 he became Consultant in Plastic Surgery to the Air Ministry. He created the Plastic Surgery Unit at the Queen Victoria Hospital, East Grinstead, which soon became the largest centre in the country. There he transformed both the treatment of and the attitude adopted towards burn casualties. A master of his craft, McIndoe added much to plastic surgery, but over and above that and perhaps his greatest achieve-

ment was the way he built up the morale of countless patients suffering from hideously disfiguring burns. He appreciated the human problems which these patients faced, and with his dynamic personality quickly gained their confidence and then set about removing the load of anxieties which beset them. By the end of the war his reputation was world wide. At the time of his death in 1960 Sir Archibald McIndoe was Senior Vice President of the Royal College of Surgeons of England and had he survived for but a few more weeks he would almost certainly have been elected President of that College which he had served so well.

Air Vice Marshal George Morley, delivering the first McIndoe Memorial Lecture in 1962, painted a graphic picture of the reasons for his great success in getting things done with these words "McIndoe had a clear and decisive mind ; he knew exactly what he wanted. To those who could help to further his aims he would state his case tersely and convincingly. But he would 'turn on the heat' as he used to say, or else his quite devastating charm of manner to convert those who wished to obstruct. He was equally potent with his pen". It was my privilege to work with Archie McIndoe for the three years before I returned to Belfast in 1950 and to count this straightforward likeable colonial as my friend.

The last man to whom I would like to pay tribute is another New Zealander, Rainsford Mowlem, who qualified in Dunedin in 1924. Three years later he left his homeland and in 1931, after a thorough training in general surgery, he also fell under the spell of Sir Harold Gillies and was converted to plastic surgery, despite the advice of many of his seniors who regarded the specialty as offering little opportunity or prospect. He first worked at Hammersmith L.C.C. Hospital and later at St. James, Balham, and it was not long before he joined Gillies and McIndoe in practice in Harley Street. On the outbreak of war he established the unit at Hill End, St. Albans – an outpost of St. Bartholomew's Hospital. A fast skilful operator with a commonsense approach to his work and a ready grasp of essentials, he proved to be another outstanding teacher. By his friendly manner he did much to spread the knowledge of plastic surgery amongst other subdivisions of surgical practice. At the zenith of his career he retired and now enjoys life in the Mediterranean sunshine.

During and after the second world war these four men, Gillies at Basingstoke, Kilner at Roehampton and later at Oxford, McIndoe at East Grinstead and Mowlem at Hill End and later at Mount Vernon, were responsible for training very many young surgeons in the art and craft of plastic surgery. All outstanding teachers, each in his own way played a major part in writing the history of modern plastic surgery. If I appear to have devoted more attention to one than to another it is only because I did not have the opportunity of getting to know them all equally well.

In 1362 Guy de Chauliac, the leading surgeon of the fourteenth century, completed a great textbook of surgery. In the prologue to this work he acknowledged the debt he owed to those who had gone before him. "We are" he said "like children standing on the shoulders of a giant for we can see all that the giant can see and a little bit more".

This then is the pattern of progress. It is our privilege to profit by the work of previous generations, it is our responsibility to strive to advance a little further so that succeeding generations may benefit.